

NORTH AMERICAN THYSANURA—V.

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In a previous paper there were given analytical tables to the genera of the families Aphorouridæ and Poduridæ; in the present paper will be found a table to the families and a table to the genera of the Entomobryidæ. The Smythuridæ and Papiridæ are each represented by a single genus.

The families recognized can be separated by means of the following table:—

- A. Furcula* wanting. *Aphoruridæ*.
- AA. Furcula present.
- B. Furcula attached to the ventral side of the antepenultimate abdominal segment. *Poduridæ*.
- BB. Furcula attached to the ventral side of the penultimate abdominal segment.
- C. Abdomen elongate, cylindrical, much longer than broad. *Entomobryidæ*.
- CC. Abdomen globular, but little longer than broad.
- D. Terminal segment of the antennæ long, ringed . . . *Smythuridæ*.
- DD. Terminal segment of the antennæ short, with a whorl of hairs *Papiridæ*.

ENTOMOBRYIDÆ.†

Antennæ with from four to six segments; eyes present or wanting; postantennal organ wanting; abdomen cylindrical, much longer than broad; tarsi with two claws; furcula always present, attached to the penultimate abdominal segment.

A. Body naked or clothed with hairs.

B. Antennæ four-jointed.

*Furcula is the name used by Tullberg for the ventral spring, the basal segment is the manubrium, the middle segment the dentes, and the apical segment the mucrones.

†Schott describes the following new species from California, and adds several European species:—*Entomobrya nivalis*, Linn, p. 16. *E. multifasciata*, Tullb. = *D. decemfasciata*, Pack, p. 17. *E. marginata*, Tullb, p. 17. *Sira purpurea*, Schott, p. 17. *Drepanura californica*, Schott, p. 19. *Orchesella rufescens*, Lub., p. 21. *Isotoma viridis*, Bour. var. *aquatilis*, Lub. = *I. tricolor*, Pack, p. 22. *I. palustris*, Muller, p. 22. Also the following Poduridæ and Aphoruridæ:—*Achorutes viaticus*, Tullb., p. 23. *A. armatus*, Nic. = *marmoratus*, Pack, p. 23. *Xenylla maritima*, Tullb., p. 24. *Lipura inermis*, Tullb. = *L. finetaria*, Pack, p. 24.

Schott Beitrage zur Kenntniss Kalifornischen Collembola, Bihang Kongl. Svens. Vet. Akad. Hand. Bd. 17. Afd. IV, No. 8, pp. 1-24, 1891.

- C. With a single eye-patch on each side of the head.
 D. Third and fourth abdominal segments subequal above.
 E. Dentes not extending beyond the ventral tube . . . *Isotoma*, Bourl.
 EE. Dentes extending beyond the ventral tube . *Corynothrix**, Tullb.
 DD. Fourth abdominal segment three or four times longer than the third.
 E. Mucrones falcate, not with an anteapical tooth.. *Drepanura*†, Schott.
 EE. Mucrones not falcate, with an anteapical tooth.
 F. Eyes arranged promiscuously, not in two straight longitudinal and four transverse rows *Entomobrya*, Rond.
 FF. Eyes arranged symmetrically, in two straight longitudinal and four transverse rows *Salina*, MacG.
 CC. With two eye-patches on each side of the head . *Sinella*, Brooks.
 BB. Antennæ six-jointed. *Orchesella*, Temp.
 AA. Body clothed with flattened scales.
 B. Antennæ four-jointed.
 C. Apical segments of antennæ ringed.
 D. Eyes present, twelve, six on each side of the head. *Tomocerus*, Nic.
 DD. Eyes wanting. *Tritomurus*, Frau.
 CC. Apical segments of antennæ simple, not ringed.
 D. Eyes wanting. *Beckia*, Lub.
 DD. Eyes present, sixteen, eight on each side of the head.
 E. Mesonotum simple, head exposed. *Seira*, Lub.
 EE. Mesonotum projecting over the head and in part concealing it *Lepidocyrtus*, Bour.
 BB. Antennæ five-jointed.
 C. Eye spot with a single ocellus ; apical segment of the antennæ ringed. *Templetonia*, Lub.
 CC. Eye spot with eight ocelli ; apical segment of the antennæ simple. *Strongylonotus*, MacG.

*Tullberg erected this genus for the reception of a species from Nova Zembla, *C. borealis*, Tullb. The characters separating it from *Isotoma* are certainly superficial.

†As the description of this genus may be inaccessible to many, it is appended : " Mesonotum non prominens. Segmentum abdominale quartum triplo vel quadruplo longius quam tertium. Antennæ dimidia parte corporis breviores, quadriarticulatae, articulo secundo et tertio inter se fere aequalibus, quarto omnium longissimo. Ocelli 16 ; 8 in utroque latere capitis. Pili clavati praecipue in regione cervicis et in segmentis apicalibus stipati. Mucrones furculæ parvi falciformes. Squamæ? Type, *Drepanura californica*, Schott.

*Salina**, gen. nov.—Eyes sixteen, arranged in two straight longitudinal and four transverse rows ; antennæ four jointed, twice as long as the head, segments subequal ; tarsi with two claws ; third and fourth abdominal segments unequal ; body naked. Type, *Salina Banksii*, sp. nov.

Salina Banksii, sp. nov.—Light olive ; a line between the antennæ, the eye spot, a line down each side of the body, blackish-purple ; underneath olive ; antennæ purplish, with a dark ring at the apex of the three basal segments, segments much lighter at base, hairy ; legs long, slender, light olive washed with purplish, densely covered with long bristles ; claws short, blunt, without teeth, inner half the length of outer ; tenant hair wanting ; furcula long, slender, white, bristly ; the mucrones small, divided, the upper part bowed, the end truncated, and with two notches, the lower rounded, ovate. Length, 1.25 mm.

Habitat : Florida, (Nathan Banks, collector).

Named after my friend, Mr. Nathan Banks, of Sea Cliff, Long Island, New York.

Strongylonotus†, gen. nov.—Ocelli sixteen, eight on each side of the head ; antennæ five-jointed ; tarsi with two claws ; mesonotum projecting over the head ; third and fourth abdominal segments unequal ; body covered with scales. Type, *Strongylonotus Summersii*, sp. nov.

Strongylonotus Summersii, sp. nov.—Head small, white, eye spot black ; antennæ long, slender, densely covered with long hairs, attached to the head at the apex of the eye spot, first and second segments subequal, white, third segment subequal to the second, much narrowed towards the apex, white, apex with a purplish ring, fourth segment subequal to the third, the basal half expanded, ovate, light purplish, the apical half dumb-bell shaped, with the sides distinctly hollowed out, black, appearing as a distinct segment, apical segment two-thirds the length of the fourth, black, basal two-thirds dumb-bell shaped, not so distinctly so as the apex of the fourth, apical third enlarged at base, pointed at apex, slightly incurved on the outside ; side of the mesonotum, the most of the second and all of the third abdominal segments, and a broad band across the apex of the fourth, purplish ; legs long and slender,

*Derived from the name of a village.

† στρουγγύλος, rotundus ; νωτος, dorsum.

densely hairy, similar to those of *Salina Banksii*, white, except the apex of the hind coxæ, and the hind femora, except at apex, purplish-black; claws slender, outer one-fourth longer than inner, with two teeth, inner more slender than outer, without teeth; tenant hair present; abdominal segments unequal, first indistinct, second and third subequal, fourth eight or ten times longer than third; furcula white, long, stout, densely hairy beneath, reaching beyond the ventral tube; manubrium broad, with a purplish stripe down each side, reaching about the middle of the fourth abdominal segment, with several spines at apex; dentes about as long as the manubrium, smooth, lateral hairs twice the length of ventral, serrate beneath; mucrones one-half longer than broad, with a stout terminal hook and a basal denticle. Length, 3.5 mm.

Habitat: El Pilur, Venezuela. (Summers, collector).

Named after Prof. H. E. Summers, of Champaign, Illinois.

SMYNTHURIDÆ.*

The following table will probably be found useful in separating the species of *Smynthurus*. All the species are included except *quadrisignatus*, Pack., which is not certainly known and not sufficiently characterized to be placed from the description:—

- A. Abdomen not with a dorsal spine.
- B. Furcula not with laterally developed bristles.
- C. Abdomen not black with white spots.
- D. Fourth segment of the antennæ not ringed. *minutus*, n. sp.
- DD. Fourth segment of the antennæ distinctly ringed.
- E. Fourth segment with six sub-segments. *hortensis*, Fitch
- EE. Fourth segment with more than six sub-segments.
- F. Fourth segment with eight sub-segments. *ferrugineus*, Pack.
- FF. Fourth segment with more than eight sub-segments.
- G. Fourth segment with nine sub segments.
- H. Size small; colour deep delicate roseate. *roseus*, Pack.
- HH. Size moderate; colour black with lighter markings *elegans*, Fitch.
- GG. Fourth segment with ten sub-segments. *arvalis*, Fitch.
- CC. Abdomen entirely black with four small dorsal white spots.

*Schott adds the following:—*Smynthurus eisenii*, Schott, p. 7. *S. luteus*, Lub., p. 11. *S. niger*, Lub., p. 12. *S. plicatus*, Schott, p. 13.

D. Head between the antennæ wholly black... *quadrimaculatus*, Ryder.

DD. Head between the antennæ black with
two white spots..... *sexmaculatus*, Harvey.

BB. Furcula with a row of long bristles on both sides of the dentes,
fan-like..... *spinatus*, MacG.

AA. Abdomen with a dorsal spine..... *floridana*, MacG.

Smynthurus minutus, sp. nov.—Black and yellow; head yellow, except behind and the eye spots, which are black, black extending around on the side of the face below the eye spots; eye spot narrowly encircled with yellow; on each side below the eye spot, three clear spots arranged in a transverse line; a black speck, ocellus-like, on the vertex between the antennæ; antennæ reaching beyond the apex of the thorax; basal segment black, globular, one-half the length of the second; second segment subequal to the third, yellow, petiolate at base, naked; third segment about one-half the length of the fourth, enlarged at middle, yellow, with a few scattered hairs; fourth segment yellow, blunt at tip, moderately hairy, not ringed; thorax black, except a small part of the sternum, which is yellow; legs short, stout, yellow; claws short, outer claw about as long as the tibia is broad, sinuate beneath, with a single tooth, inner claw two-thirds the length of outer, broad, stout, with a single tooth above; three tenant hairs present; abdomen black, except a yellow spot on the underside of the anal tubercle, naked, except a few bristles on anal tubercle; furcula slender, slightly hairy beneath; manubrium reaching the middle of the anal tubercle; dentes subequal in length to the manubrium; mucrones one-third the length of dentes, simple, pointed, with a slight hook at apex, with a high power appearing very finely serrate. Length, 1 mm.

Habitat: Ithaca, New York.

Collected by Mr. R. H. Pettit under pieces of wood in a plant jar in the University Insectary.

PAPIRIIDÆ.*

Papirius purpurescens, sp. nov.—Blackish purple; head between the antennæ washed with yellowish, second segment of the antennæ (remainder wanting) and the claws white or transparent; the remainder of the body, including the entire furcula, blackish purple; basal article of the antennæ very short, one-third the length of the second; legs long, slender,

*Schott adds a single species, *Papirius maculosus*, Schott, p. 14.

hairy ; claws short, stout, outer broadly rounded, with two teeth, one at middle, the other at base, inner claw nearly as long as outer, more slender, with two bristles at tip ; tenant hairs present ; abdomen slightly hairy, more abundant at apex, anal tubercle with a few scattered fringed clavate hairs ; furcula long, slightly hairy above ; manubrium extending half its length beyond the apex of the abdomen, stout ; dentes subequal to the manubrium in length, narrowed beyond the base ; mucrones one-fourth the length of the dentes, apex blunt, slightly serrated at middle. Length, 3 mm.

Habitat : Sea Cliff, Long Island, New York. (Banks, collector).

Readily recognized by the purple legs and furcula.

Papirius olympius, sp. nov.—Reddish, spotted with dark brown, in young specimens purplish ; eye spot black ; vertex covered with stiff bristles ; a longitudinal brown band extending from the back of the head to the eye spot, another in the middle of the vertex, extending down the middle of the front ; antennæ nearly as long as the body, purplish, hairy, basal segment light at base, dark at apex, one-fourth the length of the second, second one-half the length of the third, third segment slender, with seven sub-segments at apex, fourth segment with six sub-segments ; abdomen and thorax with two sinuate brown bands on each side of the dorsum, the middle ones meeting at the apex and base of the thorax, and on the basal half of the abdomen, also a band extending from this basal transverse band of the abdomen along the middle of the back towards the head, bilobed in front, a triangular spot just before the apex of the abdomen and promiscuous mottlings on the side, brown ; body covered with broad flattened hairs ; legs long, slender, spiny, reddish ; claws long, outer three times as long as the tibia is broad, with two teeth, inner two-thirds the length of outer, with a hair at apex reaching beyond the apex of the outer claw ; tenant hair wanting ; furcula slender, long ; manubrium short, two-thirds the length of the dentes ; dentes with a row of long hair-like spines along each side of each member ; mucrones about one-fourth the length of the dentes, serrate beneath. Length, 2-3 mm.

Habitat : Olympia, Washington. (Kincaid, collector).